

U.S. Patent Application Serial No. 10/015,564
Supplemental Amendment dated August 13, 2003
Reply to OA of April 11, 2003

IN THE CLAIMS:

Please amend claim 53 and add new claims 54-58 as follows:

1-23. (Cancelled).

24. (Previously Presented): A composition for coating having a gas barrier property comprising coating-forming components of an epoxy resin and an amine curing agent, wherein said epoxy resin is an epoxy resin with glycidylamine moiety derived from metaxylylenediamine and said amine curing agent is a reaction product of the following (A) and (B):

(A) metaxylylenediamine or paraxylylenediamine;
(B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer.

25. (Previously Presented): The composition for coating according to claim 24, wherein said (B) polyfunctional compound is acrylic acid, methacrylic acid and/or derivative thereof.

26. (Previously Presented): A composition for coating having a gas barrier property comprising coating-forming components of an epoxy resin and an amine curing agent, wherein said amine curing agent is a reaction product of the following (A), (B) and (C):

(A) metaxylylenediamine or paraxylylenediamine;
(B) polyfunctional compound having at least one acyl group which is capable of forming amide

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group moiety by reaction with a polyamine to form an oligomer;
(C) formic acid, acetic acid, propionic acid, butyric acid, lactic acid, glycolic acid, benzoic acid and/or derivative thereof.

27. (Previously Presented): The composition for coating according to claim 26, wherein said epoxy resin is an epoxy resin with glycidylamine moiety derived from metaxylylenediamine.

28. (Previously Presented): The composition for coating according to claim 26, wherein said (B) polyfunctional compound is acrylic acid, methacrylic acid and/or derivative thereof.

29. (Previously Presented): A coating comprising the composition for coating having a gas barrier property described in claim 24.

30. (Previously Presented): A coating comprising the composition for coating having a gas barrier property described in claim 26.

31. (Previously Presented): A coated film having a gas barrier property coated a gas barrier layer on at least one side of a flexible polymer film, wherein said gas barrier layer is a layer formed by cure of a composition for coating having a gas barrier property comprising coating-forming components of an epoxy resin and an amine curing agent, wherein said epoxy resin is an epoxy resin

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with glycidylamine moiety derived from metaxylylenediamine and said amine curing agent is a reaction product of the following (A) and (B):

(A) metaxylylenediamine or paraxylylenediamine;
(B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer.

32. (Previously Presented): The coated film according to claim 31, wherein said (B) polyfunctional compound is acrylic acid, methacrylic acid and/or derivative thereof.

33. (Previously Presented): The coated film according to claim 31, wherein said flexible polymer is a polyolefin film, a polyester film or a polyamide film.

34. (Previously Presented) A coated film having a gas barrier property coated a gas barrier layer on at least one side of a flexible polymer film, wherein said gas barrier layer is a layer formed by cure of a composition for coating having a gas barrier property comprising coating-forming components of an epoxy resin and an amine curing agent, wherein said amine curing agent is a reaction product of the following (A), (B) and (C):

(A) metaxylylenediamine or paraxylylenediamine;
(B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer;

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(C) formic acid, acetic acid, propionic acid, butyric acid, lactic acid, glycolic acid, benzoic acid and/or derivative thereof.

35. (Previously Presented): The coated film according to claim 34, wherein said epoxy resin is an epoxy resin with glycidylamine moiety derived from metaxylylenediamine.

36. (Previously Presented): The coated film according to claim 34, wherein said (B) polyfunctional compound is acrylic acid, methacrylic acid and/or derivative thereof.

37. (Previously Presented): The coated film according to claim 34, wherein said flexible polymer film is polyolefin film, a polyester film or a polyamide film.

38. (Previously Presented): A multilayered laminate having a gas barrier property comprising two outer layers (S₁) and (S₂) and at least one intermediate layer comprising at least one gas barrier layer (G) interposed between said two outer layer (S₁) and (S₂), wherein said gas barrier layer (G) is a layer formed by cure of a composition for coating having a gas barrier property comprising coating-forming components of an epoxy resin and an amine curing agent, wherein said epoxy resin is an epoxy resin with glycidylamine moiety derived from metaxylylenediamine and said amine curing agent is a reaction product of the following (A) and (B):

(A) metaxylylenediamine or paraxylylenediamine;

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(B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with polyamine to form an oligomer.

39. (Previously Presented): The multilayered laminate according to claim 38, wherein said (B) polyfunctional compound is acrylic acid, methacrylic acid and/or derivative thereof.

40. (Previously Presented): The multilayered laminate according to claim 38, wherein each said outer layers (S₁) and (S₂) is flexible polymer film layer (F).

41. (Previously Presented): The multilayered laminate according to claim 40, wherein said flexible polymer film layer (F) is one film layer selected from the group consisting of a polyolefin film, a polyester film and a polyamide film.

42. (Previously Presented): The multilayered laminate according to claim 40, having flexible polymer film layer (F) - gas barrier layer (G) - flexible polymer film layer (F), flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P) - gas barrier layer (G) - flexible polymer film layer (F), flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P) - gas barrier layer (G) - metallic foil layer (M) - gas barrier layer (G) - flexible polymer film layer (F) or flexible polymer film layer (F) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - flexible polymer film layer (F).

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43. (Previously Presented): The multilayered laminate according to claim 38, wherein said outer layer (S_1) is flexible polymer film layer (F) and said outer layer (S_2) is paper layer (P) or metallic foil layer (M).

44. (Previously Presented): The multilayered laminate according to claim 43, having flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P), flexible polymer film layer (F) - gas barrier layer (G) - metallic foil layer (M) or flexible polymer film layer (F) - gas barrier layer (G) - metallic foil layer (M) - gas barrier layer (G) - paper layer (P).

45. (Previously Presented): The multilayered laminate according to claim 38, wherein said outer layer (S_1) is paper layer (F) or metallic foil layer (M) and said outer layer (S_2) is paper layer (F) or metallic foil layer (M).

46. (Previously Presented): The multilayered laminate according to claim 45, having paper layer (P) - gas barrier layer (G) - metallic foil layer (M), paper layer (P) - gas barrier layer (G) - paper layer (P), metallic foil layer (M) - gas barrier layer (G) - metallic foil layer (M), paper layer (P) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - metallic foil layer (M), paper layer (P) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P) or metallic foil layer (M) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P) - barrier layer (G) - metallic foil layer (M).

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47. (Previously Presented): The multilayered laminate according to claim 39, wherein said gas barrier layer (G) has an oxygen permeation factor of $0.2 \text{ cc} \cdot \text{mm/m}^2 \cdot \text{day} \cdot \text{atom}$ or below under the conditions of temperature 23°C and relative humidity 60%.

48. (Previously Presented): A multilayered laminate having a gas barrier property comprising two outer layers (S_1) and (S_2) and at least one intermediate layer comprising at least one gas barrier layer (G) interposed between said two outer layers (S_1) and (S_2), wherein said gas barrier layer (G) is a layer formed by cure of a composition for coating having a gas barrier property comprising coating-forming components of an epoxy resin and an amine curing agent, wherein said amine curing agent is a reaction product of the following (A), (B) and (C):

(A) metaxylylenediamine or paraxylylenediamine;
(B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer;
(C) formic acid, acetic acid, propionic acid, butyric acid, lactic acid, glycolic acid, benzoic acid and/or derivative thereof.

49. (Previously Presented): The multilayered laminate according to claim 48, wherein said epoxy resin is an epoxy resin with glycidylamine moiety derived from metaxylylenediamine.

50. (Previously Presented): The multilayered laminate according to claim 48, wherein said (B) polyfunctional compound is acrylic acid, methacrylic acid and/or derivative thereof.

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51. (Previously Presented): The multilayered laminate according to claim 48, wherein each said outer layers (S₁) and (S₂) is flexible polymer film layer (F).

52. (Previously Presented): The multilayered laminate according to claim 51, wherein said flexible polymer film layer (F) is one film layer selected from the group consisting of a polyolefin film, a polyester film and a polyamide film.

53. (Presently Amended): The multilayered laminate according to claim 51, having flexible polymer film layer (F) - gas barrier layer (G) - flexible polymer film layer (F), flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P) - gas barrier layer (G) - ~~flexible barrier layer (G)~~ - flexible polymer film layer (F), flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P) - gas barrier layer (G) - metallic film foil layer (M) - gas barrier layer (G) - flexible polymer film layer (F) or flexible polymer film layer (F) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - flexible polymer film layer (F).

54. (New): The multilayered laminate according to claim 48, wherein said outer layer (S₁) is flexible polymer film layer (F) and said outer layer (S₂) is paper layer (P) or metallic foil layer (M).

55. (New): The multilayered laminate according to claim 54, having flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P), flexible polymer film layer (F) - gas barrier layer (G) - metallic foil layer (M) or flexible polymer film layer (F) - gas barrier layer (G) - metallic foil

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layer (M) - gas barrier layer (G) - paper layer (P).

56. (New): The multilayered laminate according to claim 48, wherein said outer layer (S_1) is paper layer (F) or metallic foil layer (M) and said outer layer (S_2) is paper layer (F) or metallic foil layer (M).

57. (New): The multilayered laminate according to claim 56, having paper layer (P) - gas barrier layer (G) - metallic foil layer (M), paper layer (P) - gas barrier layer (G) - paper layer (P), metallic foil layer (M) - gas barrier layer (G) - metallic foil layer (M), paper layer (P) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - metallic foil layer (M), paper layer (P) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - paper layer (P) or metallic foil layer (M) - gas barrier layer (G) - flexible polymer film layer (F) - gas barrier layer (G) - metallic foil layer (M).

58. The multilayered laminate according to claim 48, wherein said gas barrier layer (G) has an oxygen permeation factor of $0.2 \text{ cc} \cdot \text{mm}/\text{m}^2 \cdot \text{day} \cdot \text{atom}$ or below under the conditions of temperature 23°C and relative humidity 60%.